

AVIATION

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THE GLENN L. MARTIN CO.

CLEVELAND

Member of the Manufacturers Aircraft Association

AVIATION AND AIRCRAFT JOURNAL

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Secretary Daniels' Bonsuuring Argument

THE annual report of the Secretary of the Navy has been made to the President and a great amount of information regarding naval aviation is contained in the recommendations. Secretary Daniels recommends that the Navy operate all government vessels.

It is significant to note that the arguments that are used for the naval operation of transports, harbor boats, barges, lighters, the ships of the Shipping Board, Coast Guard, Public Health Service and all the other water craft of the various bureaus of the government are those to which the Navy has been opposed when used in favor of a United States. To quote from the argument:

"America should have but one Navy. At present there are various 'little navies,' ranging activities conducted under the supervision of different departments which really could be far more advantageously operated under a single control. Economy and efficiency in government are the ends we are all seeking—the placing of governmental activities where they can be most effectively operated, preventing duplication of effort and material, eliminating lost motion, and securing the best possible service at minimum expenditure. One of the cardinal principles in operation is that all the forces engaged in the same kind of work should be concentrated under one head and in one organization."

No better logic has ever been pressed for a united air force and it needs no further elaboration.

Piloting in a Race

URING the last year there have been several examples of the difference between a speed record over a straight course and a speed race. The difference is caused by the necessity of turning corners and sometimes by making landings and take-offs. In these requirements the pilot is the deciding factor and a very good machine may be defeated by a poor machine with a better pilot.

During the recent Pulitzer Trophy contest all of the winners made excellent turns at the pylons while some of the others lost turns at such turns. Each of the first six entries drew favorable comment from the pilots who use the race from the ground. These pilots were in order, Moreley, Hartney, Aecker, Herst, Laversota, and Roselli. To these should be added Bradley in the Loening special. Both Laversota and Roselli were competing for class prizes in a field of standardized machines.

A large gain of controllability at the expense of two or three miles an hour of maximum speed sacrificed, would probably have a more favorable effect on the chance of the machine winning a race than giving the machine a slightly increased speed at the expense of controllability. This is being recognized all over the world and foreign writers are prone to claim that the Gordon Bennett race was won because the

French machines were better piloted. This is not so. The American pilots were as good as any they were pitted against. Manufacturers should consider carefully the conditions of a race in designing an entry and pilots should always bear in mind that the final decision depends largely on the way they fly the course.

Col. Clark Leaves Army

ONE of the greatest losses that the Army Air Service has sustained since the peace time organization has been effected is the retirement of the chief aeronautical engineer Col. V. E. Clark to engage in civilian aeronautic construction. It leaves to the attention of the public, again, the fact that in a highly specialized branch where most of a high order of engineering judgment are needed, that the developments at present available are inadequate and salient substantial progress is made for such talent by legislation, the Army will always be at a disadvantage. The Navy has also an interest in the retirement of Commander Culver who was in charge of the Naval Aircraft Factory and is now engaged in civilian work.

To lead the world in aeronautics as the United States will do in the plane now in formation are needed, not the best technical skill must be exerted and to retain or attract such ability will be one of the most difficult problems that will arise before the Air Service.

The many years that Colonel Clark has spent in specialization have given him an international reputation and placed him in the front of his profession. The Air Service loss will be the industry's loss, but the principle behind the change will be allowed to continue disrupt the service and render McCook Field, the Air Service aeronautic center, barren of the high grade talent that it should have at its disposal.

Unguarded Scenery

THE New York World printed the following salutation on aviation during the Pulitzer Trophy Race:

"High officers of the Navy no longer make a secret of the fact that this country is planning a trans-Pacific flight. Two or three who were at Mitchel Field Thursday discussed the machine with which it will be undertaken, a monoplane of 3,000 horsepower or more."

"The trans-Pacific plane is already taking shape at the navy establishment at Philadelphia, but it will be another year before it will be ready to keep off."

"This is one of the subjects that is usually guarded with the utmost secrecy and it is interesting to know that it is a matter that newspaper men feel that they can write about with such certainty. Secretary Daniels in his report refers to the airplane but does not mention the purpose for which it is to be used."

Secretary Daniels on Aeronautics

The annual report of the Secretary of the Navy contains many references to aircraft and the policy of the Navy in regard to air work. In many respects the report is of the greatest importance to those who are aiding in the formation of an air policy for the government. Paragraphs giving various views of the Secretary follow without comment which can be reserved for at later time:

Extracts from the Report

Naval aviation, which proved its effectiveness by extensive operations in Europe and America during the war, and in the flight of the NC-4 but the way across the Atlantic, has given fresh evidence of its efficiency in connection with the fleet and the needs of the nation.

Starting from Philadelphia, a series of six flights of the fleet air force made a seven-months' cruise to the West Indies and the Spanish Main, engaging in maneuvers with the fleet, and flying 12,731 miles under their own power without serious mishap or loss of life.

By Four-Engines Planes Carry Heavy Load

Six large, twin-engine, biplane flying boats, known as Navy F-2's, which had been flying steadily since May 1, 1918, with a flying range of 1,000 miles, and a length from nose to tail of 50 feet, were used in the cruise, carrying a crew of two, flying gear and emergency repair equipment, those big craft requiring two 400-horsepower Liberty motors for propulsion.

The several events in one of these air boats at five points, two engagements, and one radio operation, but on this cruise they carried additional personnel, three hours among the air boats between 50 and 50 more.

The "Shamrock" and "Sandpiper" Served as Tenders

The air squadron was accompanied on the voyage by the minelayer *Shamrock*, on a tender ship, and the mine sweeper *Sandpiper*, as a repair and fuel ship. Generally, the *Sandpiper* would precede the squadron from port to port, with the *Shamrock* following. The *Sandpiper* had a crew of 100, which might have met with trouble. The freedom of both ships was that of a service base, however, the general facilities of a permanent base. It was found, however, unnecessary to house the planes, and repairs of a kind which required landing machines on the water for any considerable period were few and far between, the aviators themselves carrying all minor repairs on route.

Anchored in Foul Lake Under Scrapping Coat

As each boat on the detachment carried its anchor and boat, they were anchored out in the various ports of call in exactly the same manner as any other sailing craft. In fact, they were often anchored in such a manner as to bring up to 30 or 40 boats at anchor, and they made only safety and minimum damage is made possible.

At the very outset of their long voyage the planes met with severe tests of their armaments and armaments, yet came through in a manner which demonstrated that air boats of this class are able to carry on operations and air operations over periods of time heretofore thought impossible.

Aeronautics During Armistice Were Readily Overcome

Aeronautics involving aspects that were easily overcome by the squadron personnel during the trip would have been thought a year before serious enough to put the planes and out of commission. The difficulties which were met with in the early stages, to take care of just as are constantly occurring in surface craft.

Carried Out Naval Exercises with the Fleet

For weeks at a time the squadrons engaged in general activities with the fleet at Quantico and adjacent stations, including continuous exercises for the practice of tactics, mine warfare installations and familiarizing the radio operators with the operation of the sets, making flights to furnish targets for anti-aircraft gunnery practice, making

flights in connection with short-range battle practice, land dropping, night-flying practice, flying personnel and water for the operation of land machines, assembling airplanes and transporting them, and in the overhaul and repair of airplane engines.

The work of aircraft in connection with the battle practice of the fleet was of great aid in target practice and in assisting the directing of the fire of big gun crews.

Performance of the Squadron Summarized

The performance of the squadron is given in the following summary:

Total number of flights, all machines, 400

Average length of each flight, 2 hours 25 minutes.

Flights in practice, 323 flight hours.

Other flights, needed to fleet operations, searching, spotting for gunnery, etc., 4,022 nautical miles.

Total distance flown by the squadron as a whole, 12,725 nautical miles.

Total average of all machines, 71,245 nautical miles.

Total hours flown, 1,192 hours 25 minutes.

Deaths or serious injuries incident to flying operations, none.

"Considering the above figures," said Commander Leggett, who commanded the squadron, "it is fair to assume that while not yet fully solved the problems of long-distance patrols have been met by our fleet and will continue to do so."

Success with Planes

In spite of greater readjustments and reductions in personnel, naval aviation has carried on extensive air operations and exercises, LASTING miles being covered during the year by Marine Corps and naval air squadrons. In the number of flights of flying boats for fleet purposes it is not necessary to fly for long distances, important that is in increasing the flying ability of the surface and submarine vessels of various types. It is to be noted that great attention has been and is being given to this.

Aeronautics organizations have been created in the Atlantic and Pacific Fleets, which during exercises, have utilized to advantage their aviation equipment and that made available during shore bases. Fleet aircraft have been successfully employed in the development of communications, position finding, fire control, and in the solution of various strategical and tactical problems involving cooperation with surface vessels and submarines.

Division of NC Boats Formed

The NC-5, which made the first flight across the Atlantic, made a trip down the Atlantic and Gulf routes and up the Mississippi River in the interests of navigation, covering 6,000 miles, with great safety.

A division consisting of three NC boats, with the NC-5 as tender, has been formed as a part of the Atlantic Fleet Air Detachment. The *Wesleyan* has been designated as such in the same capacity for the Pacific Fleet.

Training Planes Engaged in Experimental Work

A unit consisting of bombing planes has been organized and will operate in the Hampton Roads region, pending the commissioning of the *Langley*, for the study and development of the methods and employment of torpedoes and bombs as weapons for aircraft.

Developing Dependable Ship Planes

Development of ship planes, rugged yet handy, light but dependable, capable of flying from ships, of carrying personnel in observe, and in battle with the enemy, and to operate on carriers, the fleet of the day's work is in progress. Through the work of the aircraft engineers in this connection, we confidently look forward to the day when aircraft will be transported by all classes of naval vessels.

Four battleships of the Atlantic Fleet are each equipped

December 15, 1920

AVIATION

Value of Fish Patrols Demonstrated

Naval aviation has demonstrated a beneficial commercial use of aircraft. Early in the winter of 1919 the United States naval air station at San Diego, California, was the first to patrol the coast of California with the fisheries of San Diego and vicinity. Subsequent patrols were used to patrol the large areas of coastal waters in search of schools of fish. These were readily located and the fishermen were enabled to make much greater hauls than would otherwise have been possible.

The experience and fat profits were instrumental in the formation of the Roads during the summer of 1920 with the same excellent results.

The success of this patrol having been demonstrated, the Navy will disseminate this activity, leaving it to development by commercial enterprises.

Use in Mapping Inaccessible Regions

The Navy has demonstrated the usefulness of aviation in the mapping of inaccessible regions. During the coming year it is planned to employ the aviation branch widely for this work in the areas where surveys are in progress.

Length of Flying Boats Now Under Consideration

The department has undertaken the development of the naval aircraft of a giant flying boat, larger than any now in existence. As planned, this will be a 60,000-pound vessel, with multi-wing structures, and a combination of nine Liberty motors in three groups. This is a development of the NC-4 type, the first attempt to cross the Atlantic, but the expansion to cross the Pacific, large harbors there, no rigid landing gear, however necessary to go to Europe for one flight great sea area. The markets of Germany, the birthplace of the Zeppelins, were set upon to do our due portion, as it is being built in England.

In the same connection that constructed the B-24, which successfully made the voyage from Europe to America, and which has been followed by the NC-4, the NC-5, and the B-25, for instruction in rigid airships, and when the B-25 is completed we will have ready trained personnel for its operation.

Biplane Type "Ripon" in America

The Navy has been charged with the development of rigid ships, and through former appropriations are required to carry forward this work, all that is possible with the funds available is being accomplished.

Construction of a large rigid in this country has been undertaken and this enterprise marks the beginning of a new industry in America. At Langley, Virginia, the NC-5 is under construction, the largest in the world, and the first airship. When finished it will accommodate ten dirigible and one aircraft.

At Cape May, N. J., another hangar for one ship is being erected. As soon as land can be procured on the west coast of the continent to proceed with the construction of a large double hangar for rigid with the funds already appropriated for this purpose.

Using "Nordisks" for Training Purposes

Deconcrete is being utilized by the Navy for training purposes, four L2A planes were made in lighter-than-air craft during the year, covering a total distance of 125,500 miles, without a serious casualty to personnel.

Exercises with kite balloons have been completed in connection with ships, with the view of determining their usefulness and the methods for their employment.

415



Secretary Daniels

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Airplane Cannon Developed—See Gun Complaint

Airplane cannon development has proceeded, and six guns are now practically completed.

After further tests and minor modifications in the flying mechanisms and mount these guns will be issued to the service.

If a contemplated using them as part of the armament of the NC type flying boat.

The armament of the small rigid-type airplanes used for duty on board ship comprises fixed machine guns synchronized to fire through the propeller.

Airplane Personnel—Number on Active and Inactive Duty

On June 30, 1920, the officer personnel on active aviation duty was as follows:

Regular Navy	Reserve
Active	1,000
Reserve officers	1,000
Active reserve officers	1,000
Reserve officers	1,000
Marine Corps	1,000

Total 4,000

The reserve officer personnel on inactive duty was as follows:

Active	Reserve
Naval Reserve Forces (Class A) (aviation or medical)	1,000
Naval Reserve Forces (Class B) (aviation or medical)	1,000
Naval Reserve Forces (Class C) (aviation or medical)	1,000
Total	3,000

Total 3,000

Transfer of Reserve Officers Authorized

Owing to the acute shortage of regular aviators and regular officers for training as aviators, recent legislation passed provides for the transfer into the naval service of 500 re-

person and possess officers who are or have been performing aviation duties. These officers are to be taken into the regular service when found qualified by examination.

In addition to the above reinforcement, recent legislation passed provides that the Secretary of the Navy may employ, with their consent, 800 reserve officers for the aviation and auxiliary services until July 3, 1930.

Estimated Personnel of 7,000 Employed

The number of enlisted men employed in aviation duties on June 30, 1929, was:

Naval aviation ratings	4,225
Naval aviation enlisted men	1,800
Marine Corps aviators	816
Naval aviators	7,000

Only Necessary Air Stations Maintained

The Navy is maintaining only such air stations as are necessary from an operating standpoint. During the fiscal year several stations were discontinued, and on July 1, 1929, the number of stations in operation was 13, as follows: Naval Air Station, Pensacola, Fla.; Air Station, Key West, Fla.; Air Station, San Diego, Calif.; Air Station, E. C. Faris Island, S. C.; Air Station, Ft. Lauderdale, Fla.; Air Station, Quantico, Va.; Coco Solo, Canal Zone; Fort McPherson, Ga.; Santa Domingo, Dominican Republic; Pearl Harbor, Hawaii.

More Stations Needed on Pacific Coast

Stations are especially needed on the Pacific coast, where at present but one exists, and in our smaller possessions. It would be necessary in case of war to augment our aviation resources, to add the facilities of repair and maintenance, and every encouragement should be given to them. To this end the Government should proceed to create aviation facilities which will permit flying over our large centers of population.

More Airplanes Construction

Up to the present time the situation of airmen has been practically all wood. It has always been recognized that there would be great advantages in metal construction, but there are a number of very serious engineering problems at the start, requiring a great amount of research and experimentation for their solution.

We are not yet prepared to build planes of metal equally light and strong as those made of the best wood materials, but we are moving toward that goal. The first step is to build planes in an experimental way which will compare favorably with those built of wood and with the rapid development of the art we may confidently predict that within a reasonable time the metal construction will supplant the wood at least the majority of aerial planes.

Bureau of Aeronautics Should Be Established

No part of our Government more heartily favors restricting expenditures than does the Navy Department, but it is fair to say to insure the development of an important air service as aviation is held by the Department to be an organization which it can best serve.

In developing aviation as a naval service it was confronted with the difficult problem of building a new and important branch into an old organization not designed to care for it. The best interests of the Navy would be served by the creation of a Bureau of Aeronautics, appropriating money directly in the office of the Secretary for the purposes of aviation, and building the organization as a single fund.

At present aviation funds for all purposes are allotted through the Office of the Chief of Naval Operations, and are directly controlled by the Secretary. This plan is defective in that it charges the Chief of Operations with numerous details with which he should not be troubled or concerned and places under his office administrative duties concerning aviation which do not properly belong there. These details are handled under the Planning Section of Operations, a section not created or equipped for administrative purposes.

Legislated Bureau Needed to Coordinate the Work

A logical bureau, with a definite organization that will permit coordination of the important work concerning aviation, should be created, the plan being that it should belong to, or at our naval household. Details concerning other bureaus which are already equipped to handle such matters should not be assigned to Aviation, but the technical aviation sections of all bureaus should be detailed under the Bureau of Aviation to avoid delays and misunderstandings as caused through the effort necessary to obtain concerted action.

Important to Develop New and More Powerful Types

That naval aviation will, in the not distant future, possess an importance second to that of naval gunnery is a certainty. Another task of primary importance for us is the organization fitted to its needs should be allowed to banish the development of the youngest and most promising branch of the service. The most important problem now are not those of production, as was the case during the war, but of developing new or improved types adapted to the needs of developing naval air and tactics in the use of aircraft. Cooperation with the Bureau of Ordnance is of great importance, as well as with the Bureau of Engineering, so that we still far behind certain other countries in lighter-than-air craft, and the competition upon which we are now engaged should be but the beginning in this important field. Bad types change so rapidly, the range of improvement is so large, that we should utilize our best manufactory and inventive genius in creating weapons of the air as far superior to those of the present as are our latest battleships and battle cruisers to the surface vessels of a generation ago.

Establishment of Separate Air Service Would Be Desirable

Each service, Army, Navy, Post Office Department, has its own problems to solve. Airplanes suitable for one are often entirely unsuited to the purposes of the other. Land planes, by reason of their liability to sustain themselves adrift if compelled to alight on the water, are unsuitable for patrol over sea areas. Flying boats can not alight on land. Seaplanes serve us with an even greater difficulty. Flying boats are not suitable for aerial delivery. Had the mail gone by train, it would not have reached Omaha in time to allow the delivery to the post office before the following morning. Had the mail been Omaha to Chicago, the time of arrival in time to catch all passengers out of Chicago 12 hours earlier than if it had gone by train. The commercial interests of Omaha have cooperated splendidly with the Air Mail Service by furnishing a large air mail field and perhaps the largest terminal hangar in the United States.

The time has come to re-examine the route between Chicago and St. Louis on August 16, 1929. The distance is such that the mail from Chicago arrives in St. Louis in time for the first afternoon delivery instead of the delivery on the following morning, and, northbound, the St. Louis mail arrives in time for delivery in Chicago that afternoon instead of the following morning. The city and the citizens of St. Louis have requested at Forest Park a large public audience, the purpose on which is for the exclusive use of the mail service.

Appropriations Should Keep Pace With Development

Heavy grant ratings are giving much attention to aviation and the development of new and better types of aircraft. The possibilities of strength are limitless, and the use of basic planes in war rear revolutionizes warfare. The United States ought to lead in study, experiment, development, and construction. Appropriations should be ample for this modern agency of transportation and war.

Airplanes Sold Readied 142,000

The sale of airplanes has proceeded steadily, a total of 191 new machines having been sold for \$60,000,000, and 62 used machines for \$1,000,000. The total proceeds from the sales during the fiscal year amounted to

Postmaster General Burleson on the Air Mail

In the annual report of the work of the Post Office Department, Postmaster General Burleson gives the following account of the progress of the work of the Air Mail Service.

The Air Mail Service was operated during the fiscal year with

westbound trip was made at the rate of 339 miles per hour and was effected without a forced landing either for weather or mechanical trouble. The plane carried 16,000 letters, which arrived in San Francisco 22 hours ahead of schedule time, by which time the train made all its connections.

In the operation of the New York-San Francisco air-mail service, the Post Office Department had to

choose between advancing 16,000 letters 22 hours each direction, or by having the air mail with the rail-way service, using trains at night to advance 64,000 letters 28 hours, each direction, and a 24-hour operation, the latter policy, which is now being adopted by the following operations.

The second extension was from Chicago to Omaha, which service was inaugurated on May 15, 1929. The distance of this route is 449 miles air line. The planes leave Chicago with Chicago and western mail for Omaha, at which point they arrive at 10 a.m. for afternoon delivery. Had the mail gone by train, it would not have reached Omaha in time to dispatch them to the through west mail connection which left New York at the same time. The planes, which carry 16,000 letters in ample time to catch all passengers out of Chicago during the night, have been advanced to 10 a.m. for delivery in Omaha. The Chicago to Omaha distance is 310 miles air line.

At Chicago 16,000 letters are taken from a New York train arriving at Chicago during the night and dispatched from Chicago at daybreak to Cheyenne, Wyo., where they arrive in the afternoon as ample time to place them on the through San Francisco mail connection, which has left New York two nights previous. These letters have been advanced to 10 a.m. for delivery in Cheyenne.

At Cheyenne 16,000 letters are taken from the through west mail connection which arrives in Cheyenne during the night. These 16,000 letters are started for San Francisco at daybreak and delivered that afternoon in San Francisco by planes, making at least a day's advance in this quantity of mail. The 32,000 letters have been advanced 28 hours at their travel from New York to San Francisco.

The various intermediate stations, including Cheyenne, similarly complete the same quantity of mail to New York City.

Regular night flying with the mail has not been practised with the present types of planes in the mountain sections, but it is practised in the level country of the Middle West, and is being developed in making preparations in the way of night flying, and the use of radio equipment for supporting planes with magnesium flares. The service will be inaugurated on the early spring between Chicago and Cheyenne, Wyo., and will result in delivering mail from New York to



OPP. PRAKES, SECOND ASSISTANT POSTMASTER GENERAL.

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Charyone within 24 hours. The gas from Charyone to San Francisco will then be a matter of 12 hours flying.

The Navy Department has agreed to deliver to the Post Office Department 25 Cessna planes, mounted with three engines, capable of carrying a ton and a quarter of mail. The planes with the multiple power plants are intended to be used on the night flights.

Indeed, in addition to this very great expedition of the mail between New York and San Francisco, the transcontinental air mail will prove of great value in the military air operations through the mountains every 200 miles of hilly ground, landing fields, and mechanized and fuel facilities, which are always at the disposal of the military forces.

The fourth extension of the air mail from Chicago to St. Paul and Minneapolis, which the Army Mail Service and Air Mail Service had agreed to make, the transcontinental route, is being put into operation.

The New York-Washington route has operated during the fiscal year successfully and dependably. As a measure of the speed of the planes, the air mail has been able to make better connections with the carrier delivery in Washington than was the train service which it replaced.

At the time of the formation of the Air Mail Service it was the expectation during the winter of 1915-16, that winter, from the standpoint of temperature, snow, and ice, would be the worst one experienced as a number of years, yet the air mail between New York and Washington during the month of February made successfully 36 trips out of a possible 46 trips. In the fall of 1916, the Air Mail Service had to make 100 trips as well as a number of flights. In the winter of 1917-18 Chicago to Chicago there were 97 successful mail trips out of 98 scheduled to be flown during February, 1918. The operations during that winter developed much information of value in aviation, which should result in further improved operations during the coming winter.

The American Air Mail Service has been operating during the past year a total of 3,000 miles, over which are flown more daily except Monday is flown. The total flying of the mail planes, including flying and testing of planes, aggregates 1,862,625 miles. The total personnel engaged in this far-reaching operation is divided as follows:

Supervisory official and clerks in Washington

Post office departments

Field clerks, etc.

Mechanics and drivers

Warehousemen

The personnel at the rate of one employee for each \$5,000 miles per year flown.

The following are the landing fields that are being maintained for the operation of the air mail. They are about 200 miles apart and form the greatest airfield system of equipped and maintained aviation terminals in the world.

Landing.

	Employees	Remarks.
College Park, Md.	5	5 miles of Washington, on New York
Passaic, N. J.	4	10 miles of New York
Philadelphia, Pa.	48	16 miles of Philadelphia, on New York
Mount Vernon, N. Y.	1	10 miles of New York
St. Paul, Minn.	17	10 miles of New York
Minneapolis, Minn.	18	10 miles of New York
Chicago, Ill.	12	10 miles of New York
Baltimore, Md.	11	10 miles of New York
St. Louis, Mo.	10	10 miles of New York
Albion, N. Y.	17	10 miles of New York
Gloucester, Pa.	8	10 miles of New York
Canton, Pa.	8	10 miles of New York
Cleveland, Ohio	12	10 miles of New York
Youngstown, Ohio	4	10 miles of New York
Newark, N. J.	10	10 miles of New York
Chicago, Ill.	18	10 miles of New York
Seattle, Wash.	4	10 miles of New York
Spokane, Wash.	4	10 miles of New York
Omaha, Neb.	12	10 miles of New York
St. Paul, Minn.	12	10 miles of New York
Chicago, Ill.	12	10 miles of New York
St. Louis, Mo.	12	10 miles of New York
Albion, N. Y.	12	10 miles of New York
Gloucester, Pa.	12	10 miles of New York
Canton, Pa.	12	10 miles of New York
Cleveland, Ohio	12	10 miles of New York
Youngstown, Ohio	12	10 miles of New York
Seattle, Wash.	12	10 miles of New York
Spokane, Wash.	12	10 miles of New York
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New Wright Aeronautical Engine

The recent announcement of the Wright Aeronautical Corp. that it had changed and improved the engine which it has been manufacturing as the Wright-Hispano that it had changed the name to Wright, is of deep interest in the aeronautical world.

First, the engineers of the Wright-Martin Co., parent organization of the present Wright company, brought back from France with them the plans of the Hispano-Suiza and the right to manufacture it in America. There was a slight alteration made in the engine design, and the whole had been reconstructed that the American workers with the knowledge and approval of the Army Air Service placed their own stamp upon the product, and it was known as the Wright-Hispano. Further improvements have so changed the engine that the Wright company believes that it is entirely American now, and in the words of E. B. Rentschler, vice-president of the company, "The Hispano-Suiza engine has the Liberty in its genes." Members.

"Nothing in this world can remain stationary," Mr. Rentschler said. "It either goes forward or backward. This is especially true in everything pertaining to aeronautics. An aeronautical engine must be continually improved, must be improved to meet the changing demands placed upon it by the plane designer and by the needs of the Army and Navy Air Services. Our engineers are improving the Hispano-Suiza so that we consider we are justified in changing the name to that of the fathers of flying, the Wright brothers."

The great engine of Alfred Hispano-Suiza, inventor of the Hispano-Suiza engine, and the Government would produce in the engine line as well known. The road was long indeed as a side-enter in the western front. It is a several years' span of time, and a year or more in terms of aeronautical improvement, is a long time. The Wright Aeronautical Corp. picked the Hispano as the best engine in the world after all experts had studied various types for more than a year.

Their engineers, however, were not satisfied merely to turn out Hispano even after the American rights had been purchased, and the Air Service demanded for large production. The first 3,000 made at the big New Brunswick plant were only slightly modified, but then modifications were made so that it was considered that a number of changes in design were made with the consent of the Air Service.

The Hispano as it came to America was delicate, sensitive and high operating. The low driving ratio of the engine had been therefore toward greater standards and reliability that the Wright engine reflected, without detracting from the present the lightness and great flexibility of the original motor.

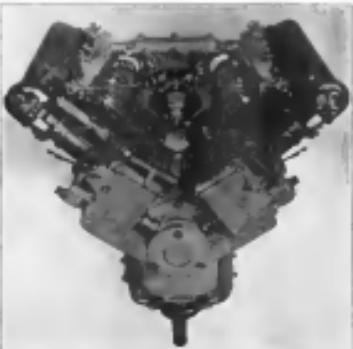
"By means of the changes the Wright Corp. made, "Other restrictions over the original Hispano, this engine is expected to be more reliable than any other aeronautical engine in the world. The changes made against the Hispano to the effect that the valves were defective and set about the solution of this problem. To eliminate the problems obtained by the change in cylinder construction, our Wright engine has been running at McCook Field, Dayton, Ohio, for more than 100 hours without overhaul, and at the last report was still running, causing no trouble. The valves on this engine have never been ground and no one, say other repair work done."

More than fifteen major mechanical changes and improvements have been made in the "Hisco" by the Wright engineers.

The early Hispano engine had very thin heads in the cylinder sleeves and nosevalves, which was a disadvantage with the valves. At first the Wright engineers thought the trouble was due to valve seizure, but careful study revealed that it was due to cylinder seizure. The latter was caused by heat from the thick head in analogy to the great results resulting from the use of a thick piston head. Valves, especially exhaust valves, are the hottest parts in any engine



FRONT END OF WRIGHT ENGINE SHOWING OIL OVERFLOW PIPES AND SHAFT DEPTH OF CAMSHAFT



REAR END OF WRIGHT ENGINE SHOWING NEW INCLUDED MAGNETOS

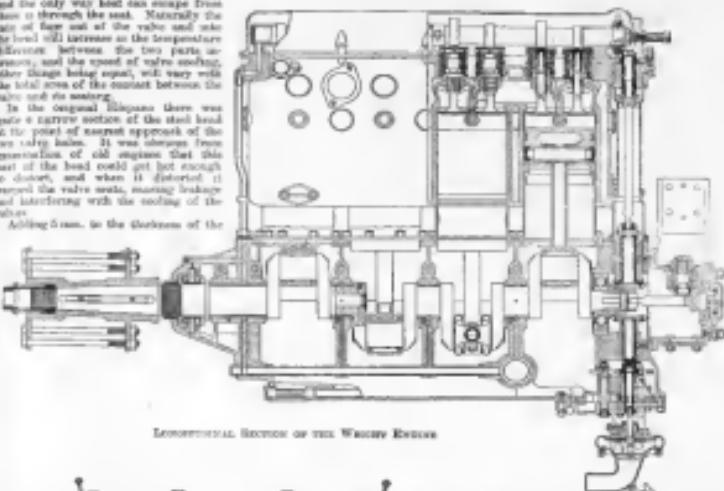
December 12, 1929

AVIATION

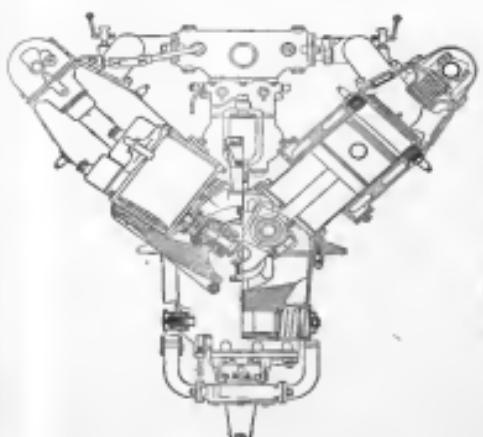
and the only way heat can escape from them is through the seat. Naturally the heat factor is the greater, the greater the head will increase as the temperature decreases. Between the two parts, however, and the speed of valve opening, after things being equal, will vary with the heat factor and the constant between the two.

In the original Hispano there was quite a narrow section of the steel head at the point of nearest approach of the two valve heads. It was obvious from generation of the engine that this part of the head could not withstand the heat, and when it distorted it warped the valve seats, causing leakage and interfering with the cooling of the valves.

Adding to this, the thickness of the



LONGITUDINAL SECTION OF THE WRIGHT ENGINE



TRANSVERSE SECTION OF THE WRIGHT ENGINE

steel sleeve head has increased the cross sectional area of the cylinder part in a point where it can conduct away the heat enough to it even under the most severe conditions without expanding at a greater rate than the remainder of the head. Consequently the valve seats stay true and the valves cool.

The cylinder heads were also redesigned, the cooling fins being changed in design. The base of the neck was increased to allow a better heat flow away from the face of the neck, thus keeping it cooler and making it less likely to burn. The design of the cylinder block was changed to allow increased circulation of cooling water around the exhaust valve seats.

The installation of American magneto and an American ignition system was one of the first changes made, but on the new model two magneto mounting brackets are required. As will be seen in the drawings, the two magneto are mounted with their breaker ends rotated so that the same openings in the supports which give access to the spark plug also lie over the distributor.

The engine, in the older design, the magneto was driven by a single transmission shaft with a coupling on either end, which meant that one magneto ran right hand and the other left, and therefore necessitated a double stock of spares. In the new layout the magneto are driven from two separate transmission shafts, each with either hand, and how they rotate in the same direction.

Receiver Appointed for L. W. F.

The L. W. F. Engineering Co., College Point, Long Island, N. Y., the largest aircraft manufacturing plant in the United States, went into the hands of a receiver on December 3. The company, which had a statement to the effect that by reason of the war, the company was at the result of the failure of the government to recognize its responsibility to the aircraft industry by permitting the damping of foreign aircraft equipment, by delaying enactment of an aeronautic code which would have considered commercial aeronautics, and by its inability to place orders for new equipment for the national defense which the Air Service needs.

The L. W. F. Engineering Co. of College Point, Long Island, was placed in the hands of a receiver on December 3. By reason of the unusual position of the character of the character of the aircraft industry, Mac Gao, Charles T. MacGao also states that, "Unless the Government aids the aircraft industry, it cannot hope to depend upon the availability of suitable commercial aircraft and facilities for their implementation nor upon the existence of manufacturing plants and supplies of materials necessary for the rapid production of aircraft of future design."

The receivership of the L. W. F. company is the result of the failure by the Government to evolve and put into operation a definite aeronautical policy or programs. The L. W. F. company was one of the pioneers. At the time of the receivership it had the largest aircraft manufacturing plant in the United States. It was capitalized at \$1,000,000 and had employed more than 2,000 people at the time of the receivership.

"The L. W. F. company was organized in 1924. It was the originator in this country of the laminated wood fuselage, now largely used in aircraft construction. It built the plane which was the first to fly the Liberty engine."

"Since the formation of the L. W. F. company has endeavored to maintain a balance between the period between military production and peace-time development. The company has so far neglected to recognize its responsibility in the utilization of aircraft in national defense as to fail, in the two years since the committee to formulate or put into operation a policy by failing to prevent the damping of foreign aircraft equipment by failing to issue an aeronautic code which would have facilitated the damping of foreign or by permitting orders to be placed for equipment which general MacGao states the Air Service is using in use."

"The L. W. F. Company never flew any biplane. The company has two water and land terminals. At great expense the company developed and built the "Gull," America's largest seaplane, and one of the largest ever manufactured, while a few weeks ago was accepted by the Air Service as a coast defense biplane."

The L. W. F. company's recent statement shows assets in excess of \$1,300,000 after very liberal charges for depreciation and total liabilities of about \$625,000. The receivers were appointed upon the written consent and request of the company representing about seventy percent of the stockholders. It is to be noted that the business is limited to aircraft until the aircraft business warrants conservative expansion. At that time the company hopes that it will be able to secure sufficient additional capital to reverse business independent of the receivership.

Airport to Be Purchased in Oregon

The deal for purchase of land for a metropolitan airport field will be closed at once, according to announcement of Mayor Peterman of Eugene, Oregon, president of the Chamber of Commerce. It was announced that all but four owners of small plots included in the tract to be purchased, have agreed to sell. The people at a special election last May voted bonds for the purchase of this land. Owing to a poor market for municipal bonds at the present time the council was unable to sell them to regular buyers, but most of the owners of the tract agreed to take the bonds in payment.

New Ignition Introduced to Engines

President men of the automotive industry gathered at the Automobile Club, New York, on the evening of November 22, to discuss the plans of E. H. Marley, managing director of the Paquette Ignition Corp. of New York, and leader of a new development in ignition of internal combustion engines, the "Pyrodyne."

Marley, an ex-captain, described his invention as furnished by automobile experts. The speaker covered the broad of development with emphasis on the flexibility of automobile and airplane transportation. The part that aircraft and beginning to play in transporting goods, goods and passengers in this country and abroad was discussed.

Gen. William Mitchell, in a speech at the Club of the United States Army Air Service, emphasized the progressive importance of an adequate air service as demonstrated by the development of air tactics and air forces during the war. This development has today reached the point, General Mitchell stated, when control of the air means control of the water.

During the latter year of the war the air services were not only fighting each other, but supremacy of the air had been claimed by the countries on the land. The United States began to fight the war on the water. In her post war development of aviation Great Britain has recognized the fact that our communications are at the mercy of seaplane air forces and is shaping her policy accordingly.

Gen. Mitchell also clearly explained the relation of commercial aviation as a resource for civilian aviation for national defense. The results of modern war, especially commercial aviation are here today, he pointed out, the great essential being adequate ground organization and frequent landing fields.

Recent development of commercial air transportation in Europe was covered in a talk by Alexander Klemm, president of American based, the principal manufacturer of European aircraft during the past two years. Mr. Klemm pointed out that his study of foreign conditions has shown that the products of American aeronautic design and engineers are on a parity with their foreign competitors, with the exception of all-metal construction, which is Germany has been made the subject of special study and development for many years. The performance of American aircraft is equal to and sometimes places in the Wright Trophy race a few days later simply confirmed the engineer's thesis on this subject.

Vital Paquette, the inventor of Paquette ignition was introduced to the dinner, and D. Bruce Morgan, an engineer who played an important part in the development and production of the Paquette explained the technical advantages of the system. The results of his research in this field, Dr. Morgan's road tests have shown, it is claimed, that the Paquette combines the advantages of battery and coil system for low speeds with all the magnetic advantages for high.

An annual demonstration was given of the operation of a 500 cylinder Paquette with spark plug attached, and Morgan replied to the technical questions raised by these interested guests.

David Isomoff, a test engineer, President grants David Olson, H. C. Curtis, Brig. Gen. William Mitchell, F. E. Foye, W. E. Baldwin, Frank Crane, Dr. W. E. Davis, F. S. Shookwiler, Chas. M. Macely, F. H. Foye and Alexander Klemm.

Aviation Pioneer Dies

James Mease, a pioneer in aviation, whose writings were a part of the reading that inspired the Wright brothers, died at his home in Boston on December 3. His obituary and a history of the possibilities of aviation were set out in the "Aeronautics" which he dictated and published for several years in the nineties.

It was in the Annual that the Wrights found their inspiration, according to a speech by George Wright at the Engineers' Club in Boston four years ago, when he paid high tribute to the services to aviation of Mr. Mease. In 1895 Mr. Mease was a manufacturer of sheets. He retired in 1896 and thereafter gave much of his time and attention to flying.



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